RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
GROUP 1765

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors: RONALD P. READE; PAUL H. BERDAHL; RICHARD E. RUSSO
Serial No.: 09/739,391
Filed: DECEMBER 15, 2000
For: PARTICLE BEAM BIAXIAL ORIENTATION OF A SUBSTRATE FOR EPITAXIAL CRYSTAL GROWTH
Group No.: 1765
Examiner: KUNEMUND, ROBERT M.
Docket No.: IB-1632

MAIL STOP RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22213-1450

DECLARATION OF LES FRITZEMEIER
UNDER 37 CFR 1.132

Dear Sir:

I, LES FRITZEMEIER, declare:

1. I hold a Doctor of Engineering Science degree from Columbia University, a Master of Science degree in Metallurgy from Columbia University, and a Bachelor of Arts degree in Physics/Mathematics from Augustana College.

2. I am the holder of 11 U.S. patents and have 15 patent applications pending.

3. From 1996 to 2002, I was the Director and Senior Program Manager at American Superconductor Corporation, and have intimate knowledge of the technology in the present patent application.

4. From 1990-1996 I held various positions at Rockwell International, Rocketdyne Division, and gained expertise in nanoscale laminate composites for high conductivity applications, developed two new superalloy products and manufacturing

processes, among other achievements. I am also the recipient of the 1995 Rockwell International Chairman's Award and of the 1989 Rockwell International Engineer of the Year award.

5. I am familiar with the present U.S. patent application and the Office Actions mailed on March 28, 2002 and May 21, 2003. I am also familiar with the response filed on September 27, 2003, and the response being filed herewith.

6. I have reviewed the teachings of Russo et al. (U.S. No. 5,432,151) and Mao et al. (J. *Vac. Sci. Technol. A* **15**(5),Sep/Oct 1997).

7. Both Russo et al. and Mao et al. teach Ion Beam Assisted Deposition (IBAD) which requires simultaneous deposition and ion bombardment of the film that is being biaxially textured.

8. In the present invention, however, exposure to the oblique particle beam takes place either before or after, but not during, deposition of the film that is being biaxially textured.

9. The present invention does not involve formation of the desired crystalline texture during deposition.

10. More particularly, contrary to the teachings of Russo et al. and Mao et al., in the present invention a previously formed non-single-crystal structure is contacted with an oblique particle beam and at least one step of contacting the structure with the oblique particle beam is not carried out simultaneously with carrying out deposition on the structure.

11. On page 2692, Mao et al. concludes that "the formation of biaxial alignment is an evolutionally selected growth process," and "about 1000 A thickness is needed to develop the alignment."

12. In contrast, the present invention is a processing method that does not involve an evolutionary process during film growth that requires a great thickness.

13. Mao et al. specifically lists examples of cases in which ion bombardment under their usual parameters does not determine the orientation of the biaxial texture - specifically, when there is an underlying substrate or layer with initial texture. This is described in the last paragraph of page 2689, which concludes on the following page

with the statement "the alignment of YSZ films is not controlled by the bombarding ion beam but, instead, epitaxially along the substrate lattice."

14. In contrast, the method of the present invention induces the desired crystalline texture utilizing an ion bombardment at the top surface, not beginning at an underlying substrate.

15. It is my opinion, that one of ordinary skill in the art would not find the present invention to be obvious in view of the cited combination of Russo et al. and Mao et al.

16. The combined teachings of Russo et al. and Mao et al., which both teach IBAD, do not teach, suggest or provide motivation or incentive invention recited in the Applicant's claims; namely, contacting a previously formed structure with a particle beam without simultaneous deposition.

17. It is my opinion, that Russo et al. and Mao et al. teach away from the present invention.

18. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application and any patent issued thereon.

Date: 10-11-03

Respectfully submitted,

Les Fritzemeier

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CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that the enclosed

1. Request for Continued Examination (RCE) Transmittal (1 page)
2. Check for $385 fee for Item 1
3. Petition for Extension of Time (1 page)
4. Check for $210 fee for Item 2
5. Amendment After Final Action (16 pages)
6. Declaration of Les Fritzemeier (3 pages)

are being deposited with the United States Postal Service on 21 OCTOBER 2003 in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EV352304819US addressed to the: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

JOHN P. O'BANION

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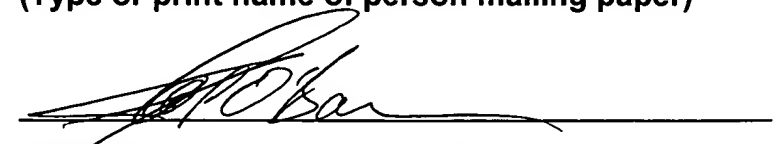

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